

## Properties of Powers

$b^x$  ← exponent or power  
b ← called the base

### 1. Product of Powers Rule:

$$b^x \cdot b^y = b^{x+y}$$

Example:  $m^2 \cdot m^5 = m^{2+5} = \boxed{m^7}$

### 2. Quotient of Powers Rule:

$$\frac{b^x}{b^y} = b^{x-y}$$

numerator exponent  
subtract the  
denominator exp.

Example:  $\frac{n^6}{n^5} = n^{6-5} = n^1 = \boxed{n}$

### 3. Power of a Product Rule:

$$(ab)^x = a^x \cdot b^x$$

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Example:  $(5x)^3 = 5^3 x^3 = \boxed{125x^3}$

#### 4. Power of a Quotient Rule:

$$\left(\frac{a}{b}\right)^x = \frac{a^x}{b^x}$$

Example:  $\left(\frac{7}{v}\right)^2 = \frac{7^2}{v^2} = \boxed{\frac{49}{v^2}}$

#### 5. Exponent of Zero Rule:

$a^0 = 1$  Any number or variable raised to the zero power is equal to 1.

Example:  $(4x)^0 = \boxed{1}$   
 $5x^0 = 5 \cdot 1 = \boxed{5}$